AMENDMENT

IN THE CLAIMS:

Please amend the claims as follows:

41. (New) A multidimensional electrophoresis device comprising a sieving material or an ampholyte material in fluidic communication with a microchannel having at least one photopolymerized solid gel having a pore size.

42. (New) The multidimensional electrophoresis device of claim 41, wherein the photopolymerized solid gel is adjacent to the sieving material or the ampholyte material.

43. (New) The multidimensional electrophoresis device of claim 41, wherein the sieving material or the ampholyte material is in the same or different microchannel as the photopolymerized solid gel.

44. (New) The multidimensional electrophoresis device of claim 41, wherein the sieving material or the ampholyte material is a liquid polymer gel or a second solid gel having a second pore size.

45. (New) The multidimensional electrophoresis device of claim 41, wherein the photopolymerized solid gel is suitable for use in isoelectric focusing (IEF), native polyacrylamide gel electrophoresis (PAGE), dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE), or a combination thereof.

46. (New) The multidimensional electrophoresis device of claim 41, wherein the sieving material or the ampholyte material is suitable for use in isoelectric focusing (IEF), native polyacrylamide gel electrophoresis (PAGE), dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE), or a combination thereof.

47. (New) The multidimensional electrophoresis device of claim 41, wherein the photopolymerized solid gel is made by UV-initiated polymerization.

48. (New) The multidimensional electrophoresis device of claim 41, wherein the photopolymerized solid gel is a polyacrylamide gel.

49. (New) The multidimensional electrophoresis device of claim 41, comprising a plurality of microchannels and wherein the plurality of microchannels comprise different solid sieving materials and at least two microchannels are in fluidic communication.

50. (New) The multidimensional electrophoresis device of claim 49, wherein the solid sieving materials are of varying concentrations of at least one polymer between about 4% to about 20% (wt/vol).

51. (New) The multidimensional electrophoresis device of claim 41, wherein the photopolymerized solid gel is a gradient gel where the concentration of photoinitiated polymer changes from a low w/v percentage to high w/v percentage from one end of the microchannel to the other.

52. (New) The multidimensional electrophoresis device of claim 51, wherein the concentration of the gradient gel changes from about 4% w/v to about 20% w/v from one end of the microchannel to the other.

53. (New) The multidimensional electrophoresis device of claim 41, wherein the length of the microchannel is about 1 millimeter to about 5 centimeters.

54. (New) The multidimensional electrophoresis device of claim 41, wherein the length of the microchannel is about 1 millimeter to about 2 centimeters.

55. (New) The multidimensional electrophoresis device of claim 41, wherein the length of the microchannel is about 1 millimeter to about 1 centimeter.

56. (New) The multidimensional electrophoresis device of claim 41, wherein the length of the microchannel is about 1 to about 7 millimeters.

57. (New) The multidimensional electrophoresis device of claim 41, wherein the length of the microchannel is about 1 to about 5 millimeters.

58. (New) The multidimensional electrophoresis device of claim 41, and further comprising a loading structure.

59. (New) The multidimensional electrophoresis device of claim 41, wherein the loading structure is shared with at least two microchannels.

60. (New) The multidimensional electrophoresis device of claim 41, and further comprising a cross channel through which a fluid sample may be electrokinetically injected into the microchannel.

61. (New) The multidimensional electrophoresis device of claim 41, and further comprising a channel through which at least one reagent may be added and come into contact with a fluid sample.

62. (New) The multidimensional electrophoresis device of claim 61, wherein the reagent is a dye, a label, or a buffer solution.

63. (New) The multidimensional electrophoresis device of claim 41, wherein the microchannel comprises at least one bypass fluidic channel.

64. (New) The multidimensional electrophoresis device of claim 41, and further comprising at least one chamber wherein a fluid sample can be processed or chemically modified prior to being

separated or analyzed.

65. (New) The multidimensional electrophoresis device of claim 41, and further comprising at least one chamber that contains at least one reagent for conducting IEF, SDS-PAGE, or native PAGE.

66. (New) The multidimensional electrophoresis device of claim 41, and further comprising at least one polymeric membrane which isolates at least two microchannels in the same plane.

67. (New) The multidimensional electrophoresis device of claim 66, wherein one microchannel is for IEF and the other microchannel is for SDS-PAGE, or native PAGE.

68. (New) The multidimensional electrophoresis device of claim 66, wherein the polymeric membrane is formed or placed on top of the microchannels.

69. (New) The multidimensional electrophoresis device of claim 66, wherein pressure applied to the polymeric membrane will deform the microchannels and prevent fluid or current movement through the microchannels.

70. (New) An assay for analyzing a fluid sample which comprises using the multidimensional electrophoresis device of claim 41.

71. (New) The assay of claim 70, wherein IEF is conducted in at least one horizontal microchannel between two electrodes and SDS-PAGE or PAGE is conducted in at least one vertical microchannel between two pairs of electrodes, wherein one pair of electrodes is placed above the two electrodes of the horizontal microchannel and the other pair of electrodes is placed below the two electrodes, whereby conducting IEF when the electrodes on the right side are of one voltage and the electrodes on the left side are of another voltage prevents the fluid sample from migrating through the vertical microchannel.

72. (New) The assay of claim 71, wherein IEF, SDS-PAGE, or native PAGE takes about 5 minutes or less to perform.

73. (New) The assay of claim 71, wherein IEF, SDS-PAGE, or native PAGE takes about 2 minutes or less to perform.

74. (New) The assay of claim 71, wherein IEF, SDS-PAGE, or native PAGE takes about 1 minute or less to perform.

75. (New) The assay of claim 71, wherein IEF, SDS-PAGE, or native PAGE takes about 30 seconds or less to perform.

76. (New) The assay of claim 71, wherein IEF, SDS-PAGE, or native PAGE takes about 10 to about 30 seconds to perform.

77. (New) The assay of claim 70, wherein the fluid sample comprises at least one protein.

78. (New) A kit for analyzing a fluid sample which comprises the multidimensional electrophoresis device of claim 41 packaged together with at least one reagent necessary for conducting IEF, SDS-PAGE or PAGE separations.

79. (New) The kit of claim 78, and further comprising a device for injecting the fluid sample into the multidimensional electrophoresis device.

80. (New) The kit of claim 78, and further comprising a label, at least one reagent, at least one device, or at least one means for obtaining a visually observable result.